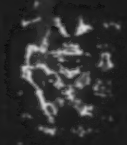


ANNUAL REPORT

for the financial year ending March 31 1981

Department of the Environment

85-6357/

Nova Scotia

ANNUAL REPORT

for the fiscal year
ending March 31, 1984

Department of the Environment

The Honourable Alan R. Abraham, C.D.
Lieutenant Governor
Province of Nova Scotia

May It Please Your Honour:

The undersigned has the privilege to present to your Honour the Annual Report of the Nova Scotia Department of the Environment for the fiscal year ended March 31, 1984.

Respectfully submitted,

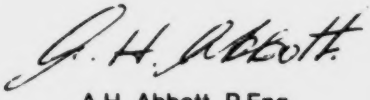
George C. Moody
Minister of the Environment

The Honourable George C. Moody
Minister of the Environment
Province of Nova Scotia

Sir:

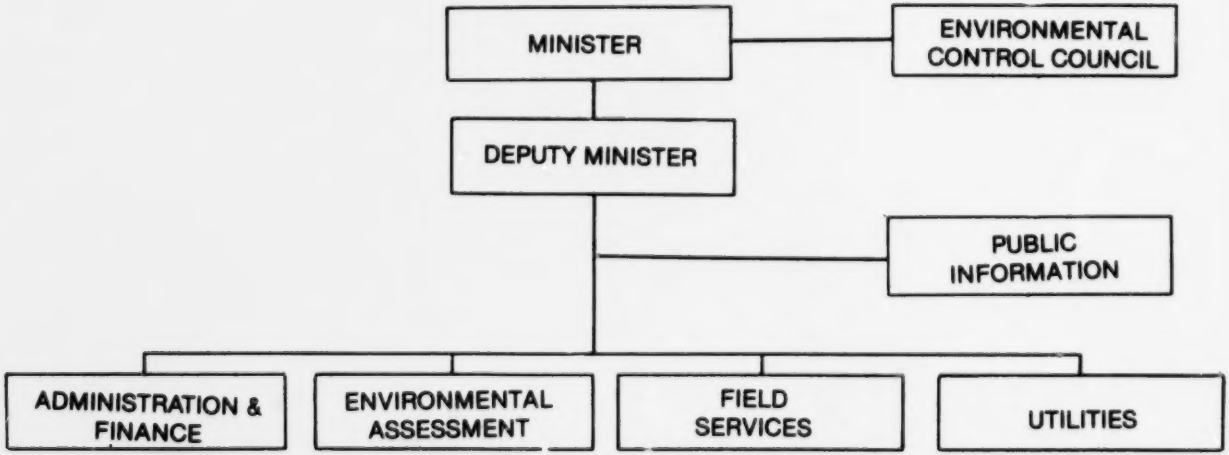
I have the honour to present to you the report of the activities of the Nova Scotia Department of the Environment for the fiscal year ended March 31, 1984.

Respectfully submitted,



A.H. Abbott, P.Eng.
Deputy Minister

DEPARTMENT OF THE ENVIRONMENT ORGANIZATION 1983-84



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INTRODUCTION

The Nova Scotia Department of the Environment was established in 1973 for the "preservation and protection of the environment." To accomplish these objectives, the Department is charged with the administration of four provincial statutes: the Environmental Protection Act, the Water Act, the Well Drilling Act and the Beverage Containers Act.

To carry out these responsibilities the Department is currently divided into four divisions. These include three main operating divisions: Environmental Assessment, Field Services and Utilities. Administration and Finance provides support services to the operating divisions and the office of the Minister and Deputy Minister.

Late in the 1983-84 fiscal year A.H. Abbott, P.Eng., was appointed Deputy Minister, succeeding E.L.L. Rowe, P.Eng. In the fall of 1983, the provincial Emergency Measures Organization (E.M.O.) within the Department became a separate agency reporting to the Minister-in-charge of the Resource Management Board. However, the Department continued to provide administrative and financial services to the E.M.O.

The Department provided 155 man-years of employment, with the head office located at Halifax. Regional offices are located in Middleton, Pictou, Port Hawkesbury, Stellarton, Sydney and Truro. The Department's 1983-84 budget estimate was $7,705,400 including both current and capital funding.

ENVIRONMENTAL ASSESSMENT DIVISION

The Environmental Assessment Division, the largest operating division in the Department, has two main areas of responsibility. Firstly, the review and assessment of individual, municipal, industrial and government undertakings for their environmental acceptability, including enforcement of permit terms and conditions under the Environmental Protection Act. Secondly, the division has responsibility for provincial water resources management including enforcement under the Water Act, with the objective of promoting optimal development and protection of this resource.

This division also includes, for administrative purposes, the Canada-Nova Scotia Flood Damage Reduction Program (see page 30) and advisory services for department policy development.

The division is divided into five sections to carry out its duties. They are Waste Management, Engineering Construction and Government Programs, Environmental Development, Water Resources Planning and Water Management Sections. Their functions and the year's program highlights are briefly summarized as follows:

Waste Management

This section has two major areas of responsibilities. They are:

(1) *Solid and Hazardous Waste Management* which provides technical assistance and advice to municipalities and industry on acceptable methods for the disposal of solid and hazardous waste, as well as providing grants to municipalities for the planning of solid waste management systems. This has been applied in various instances:

(i) Twenty solid waste disposal management studies have been initiated which will result in more than eighty percent of the province's population being covered by waste management plans. By year's end, twelve of the studies had been completed, with the remainder at various stages.

(ii) Staff responded to approximately seventy-five requests pertaining to the disposal of chemicals. Most were concerned with the disposal of unwanted laboratory chemicals or pest control products.

(iii) Staff were involved in the development of hazardous waste criteria, including a list of hazardous wastes to be used for the purposes of Canada's Transportation of Dangerous Goods Act. This list is nearing completion.

(iv) During the year, the Department initiated the first phase of a study designed to locate and assess abandoned waste disposal sites in Nova Scotia.

(2) *Industrial Pollution Control* which provides an industrial pollution review program and assistance to industry with an evaluation of proposed pollution abatement facilities, and ensures that industry complies with permit requirements.

Major projects carried out during the fiscal year include:

(i) The Rio Algom Tin Mine located at East Kemptville, Yarmouth County — this newly established mining complex occupies 1,000 hectares and has a projected operating life of 20 years. An environmental management and monitoring program was established in consultation with the Nova Scotia Department of Mines and Energy.

(ii) Georgia-Pacific Gypsum Mine, located in Inverness County, Cape Breton — the estimated production capacity for this mine is 1,000,000 tonnes per year. The environmental review of the mine is currently in the final stages of assessment.

(iii) Donkin, Lingan — Phalen Coal Mines — located in Cape Breton County consist of three major coal mining projects and are currently under environmental review in conjunction with the Cape Breton Development Corporation.

(iv) Sydney Steel Corporation — the modernization program for Sysco is proceeding on schedule. Recently, federal and provincial governments approved funding for the engineering design to formulate an environmental management strategy for the Sydney Tar Pond. Also, a draft of the environmental objectives for a world scale coke plant was developed by staff.

(v) Fish Reduction Limited of Barrington, Shelburne County — was successful in resolving their waste disposal problem,

with departmental assistance, through the development of land farming techniques. This resulted in the company receiving an industrial category award from the Environmental Control Council for their achievement.

(vi) A monitoring report on the operation of a quarry in the Halifax/Dartmouth area was prepared by technical staff in 1983. This report was the result of field measurements collected from December 1981 to March 1983. The environmental review and assessment of the proposed quarry development in the Waverley area continues.

(vii) Provincial asphalt plants continue to be inspected by staff, and reports indicate improvement in environmental management practices applied by the industry.

Engineering Construction and Government Programs

This section describes the review and inspection function of municipal services and other provincial agency projects.

The Review of Municipal Services includes such areas as proposed municipal services, highways, sewage collection and treatment facilities, and domestic water distribution systems. Altogether the section processed 146 applications this past fiscal year which dealt with new subdivision development, existing system expansion and renovation, and replacement of existing services.

During the year the following were the major activities:

The Department provided just over $1,002,400 under Section 14 of the Water Act to assist municipalities in the construction of pollution abatement facilities. Some of the major projects completed during the year consisted of a major portion of the Lakeside-Timberlea Servicing Project, and the overflow retention tank at Cole Harbour. Expansion to the Mill Cove sewage treatment plant was completed, as well as the collection and treatment system for Port Maitland which was a new concept in on-site sewage management. The staff also participated regularly in the development of standard specifications for construction of water and sewer services.

The Department was involved in the review and recommenda-

tions for improvements to the present sewage collection and disposal methods at Herring Cove and Roach's Pond, Halifax County. This section also prepared the terms of reference for a study of the sewage systems bordering the Halifax/Dartmouth metropolitan area in order to develop future treatment strategies.

Other projects of this section included:

(i) The Nova Scotia Department of Transportation submitted a number of major highway alignment proposals to this Department. A total of 13 major highway projects were approved for the Department of Transportation, which involved 100 kilometres of route alignment. The approval process requires an environmental resource inventory and field traverse of the route corridor, as well as contact with other provincial and federal agencies.

(ii) The section continued to provide the chairperson and secretarial role for the Annapolis Tidal Power Intergovernmental Advisory Committee during the period. Staff also continued to monitor the tidal power plant construction.

(iii) Finally, staff participated in the 1983–84 drafting of the annual "Standard Specifications for Erosion and Sediment Control," which is to be used in highway and subdivision construction project control.

Environmental Development

This section has three major areas of responsibilities. These include Pesticides Management, Environmental Review and Environmental Studies. The major functions, duties and activities during the fiscal year are briefly summarized as follows:

(1) Pesticides Management. This includes the review of the methods of spraying for spray application permits, with subsequent field monitoring to ensure compliance with permit terms and conditions. During the year, the Department issued 55 permits for pesticide programs to various applicants, largely from the forestry sector, covering 38,500 hectares of Nova Scotia's woodlands.

In order to further clarify the distribution of permits, the applications were divided into five categories: Forestry, Industrial, Buildings, Municipal and Agricultural. These are briefly summarized as follows:

(i) Forestry: This year the Department issued 41 permits for forestry related spray programs. The programs included conifer release, site preparation, spruce budworm control, nursery spraying and stump treatment. The applications of these programs consisted of mainly the large pulp and paper companies such as Scott Paper Ltd., Bowater Mersey Company, and Nova Scotia Forest Industries. Scothorn Farms and various private landowners also applied to this Department to conduct smaller scale forestry spray programs. Approximately 30,000 hectares of land were treated using ground application methods in fifteen Nova Scotian counties.

(ii) Industrial: Nova Scotia Power Corporation, Standish Brothers, Speedy Propane and Dominion Atlantic Railway were applicators who received the five permits issued for industrial spraying throughout Nova Scotia. Brush control and noxious weed programs accounted for 1,060 hectares of land being treated. As well, Nova Scotia Power Corporation treated 1,962 powerline poles in a wood preservation program.

(iii) Buildings: The only permit issued for a building spray program went to the Nova Scotia Liquor Commission. The NSLC treated 56 stores, throughout Nova Scotia, to eliminate insects and rodents.

(iv) Municipal: The cities of Halifax/Dartmouth, and the towns of North Sydney and Yarmouth together received six permits for the extermination in their areas of insects on trees and rodents. All told, approximately 400 hectares and 1,500 trees were treated.

(v) Agricultural: Under the category of agricultural programs, one permit was issued to the Nova Scotia Department of Agriculture for the elimination of noxious weeds along various roadsides throughout Nova Scotia. Maritime Aerial

Spraying also received a permit to conduct an agricultural crop protection program. Together the two proponents covered 7,040 hectares of land.

(2) *Environmental Review.* This includes review by staff of potential environmental impacts of proposed development; and commercial undertakings by the private sector, federal and provincial government agencies. Recommendations are made to goverment respecting their environmental suitability, and what modifications to the proposals have to be made so that they can proceed. The following are the highlights:

(i) Coastal Erosion: In the fall of 1983, a study was initiated to examine coastal erosion policy and management options open to the Province. The initial step in this exercise involved an examination of the question of liability associated with the construction of coastal protection works, and the completion of a report documenting the Department's past involvement with coastal erosion problems. This work is continuing with an assessment of policies and approaches adopted by other Canadian jurisdictions.

(ii) Bridgeport Basin: A study was initiated in the summer of 1983 to characterize existing conditions in Bridgeport Basin, Cape Breton County and its watershed, and to help predict the future impact of anticipated coal related industrial development in this area.

(iii) Millett Brook Uranium Property (Kidd Creek Mines Ltd.): A fourth survey was designed and completed as part of the Millett Brook environmental baseline data collection program. The 1983 monitoring program included the following elements:

- continuous weather recording
- radon monitoring at 14 locations
- surface water sampling (high water spring; low water summer; high water fall) at 9 locations.

Following completion of the 1983 program, further data collection was suspended pending release of the findings of the Uranium Inquiry.

(iv) Project Review: An environmental review of a proposal by Tidewater Construction Limited to develop and operate a rock quarry near Waverley in Halifax County was initiated late in the fiscal year. The Environmental Control Council was instructed to convene a public hearing on the proposal. Parties to the hearing included Tidewater Construction Company Limited, the Waverley Ratepayers' Association and the Nova Scotia Department of the Environment.

(3) *Environmental Studies.* This subject area provides funding and staff to carry out studies to assist in the development and review of provincial government environmental priority areas. This includes, among others, the assessment and development of a policy for Nova Scotia respecting acid rain based on work conducted on surface water quality over the last ten years. In addition, selective monitoring of general lake and river quality continues throughout the province. Program highlights during the year include:

(i) A continuing involvement in public concerns relating to perceived deterioration of surface water quality. An example of one major response-oriented effort during fiscal 1983-84 resulted from questions about the effects of gold mine tailings around selected Waverley area lakes, since past measurements have revealed high levels of mercury and arsenic in lake sediments.

(ii) During the past year, staff have represented the province on the Federal/Provincial Acid Rain Steering Committee of the Canadian Environment Ministers along with participation in the Dartmouth Lakes Advisory Board feasibility study for the dredging of two lakes in that city. Staff have also participated in a number of committees representing environmental issues related to offshore oil and gas.

(iii) As part of its role in the management of offshore oil and gas activities, (eg. Venture Project), the Department of the Environment is represented on three Environmental Study Revolving Fund (ESRF) Program Study Committees: Social Issues East, Effects Monitoring and Oil Spills (countermeasures). The ESRF was established by the federal government as a mechanism to assist in decision-making on

offshore exploration and development by ensuring that funds are available for relevant social and environmental studies. All of the oil and gas interest owners on Canada Lands share in the costs of the studies. Studies are undertaken by consultants, universities and government agencies.

Water Resources Planning

The Water Resources Planning Section carries out its programs under two main subject areas: Water Resource Services and Water Resources Inventory. The following is a brief summary of these functions with program highlights:

(1) *Water Resource Services* — provides information and technical assistance to industry, municipal and other government agencies respecting the quality, quantity, use, development and protection of surface water and groundwater supply sources. Staff investigate actual and potential pollution problems to ensure the protection of water supplies. This also includes the review of water supply development proposals. Program highlights during the year include:

(i) Water Quality Interpretation: staff provide water quality information, analysis interpretation and remedial recommendations. During the 1983-84 fiscal year, major time commitments were made to the investigation of tetrachloroethylene and other volatile organics in the Amherst, New Minas, and Truro municipal well water supplies. Other projects include: 1) an investigation of water quality at Maritime Waste Oil; 2) an evaluation of groundwater monitoring analyses from landfills throughout the province; and, 3) well water contamination from de-icing salt, petroleum products and farming activities.

(ii) Water Supply Assessment: staff provide assessment of existing well water supplies, water resources potential, evaluation of quantity testing and processing of water withdrawal applications. The major time commitments involved the increased use of the section by the Department of Government Services in their projects needing water supplies such as: the Beaverbank Junior High School, and the Tree Breeding Centre in Debert. In addition, a number of

man-days were required during the year to deal with an arbitration hearing regarding the alleged interference of the Novaco strip-mining operation with water supplies in Millville, Cape Breton County.

(iii) Review of Development Proposals: staff continued review of the potential effects of development proposals on water resources. Included are the proposals on subdivisions, industries, mines, exploration, solid waste, highway alignments, etc. This area of activity requires the greatest amount of time allocation by the section. Major involvements during the 1983-84 fiscal year include: a tin mine proposed by Rio Algom for Yarmouth County; Aerotech Industrial Park proposed near Halifax International Airport; Highway 107 upgrading and realignments; Corkan hydrocarbon exploration sites in the Canso Strait area; pipeline proposals as a result of the Mobil-Venture program; and, landfills at River Denys and Cogmagun for Inverness and West Hants.

(2) *Water Resources Inventory* — staff carried out surface and groundwater investigations for the purpose of evaluating the provincial water resources for both protection, and as a source of supply. This includes collection of basic data pertaining to water levels, flows and quality necessary for sound development planning, environmental assessment and water resources management. Staff continued to collaborate with the Water Survey of the Inland Waters Directorate of Environment Canada with regard to the cost sharing in the stream gauging network throughout the province. Provincial staff continued to maintain the groundwater level measuring network.

Water Management

The water management section has two main program areas: the review of water rights, and the responsibility for watershed management. Staff of this section issue approval permits for watercourse alteration subject to government regulations and guidelines. They also recommend licenses to allocate the withdrawal of water for individual, municipal, industrial, agricultural and other uses. In addition, staff investigate complaints, recommend solutions and enforce requirements under the Water Act. The section coordinates water use and watercourse alteration permits with appropriate provincial and federal agencies.

This fiscal year was one of the busiest for this section. A total of 288 applications were made for either use of surface or groundwater, or an alteration to a watercourse. This compares to the previous fiscal year (1982-83), when 249 applications were received.

Also, this section received 128 applications for the construction of forest roads. A manual was printed this year with the cooperation of the federal Department of Fisheries & Oceans and Nova Scotia Department of Lands and Forests entitled "Environmental Standards for the Construction of Forest Roads and Fire Ponds in Nova Scotia." By working jointly with the Department of Lands and Forests and woodlot owners, staff of this section helped organize an awareness program on how our water resources can be protected by proper planning and management.

Another major function provided by this section is the regulation of activity around a source of water designated as a protected water area under Section 17 of the Water Act. Staff also assist in the resolution of land and water use conflicts and issues by working with landowners, water utilities, industry and provincial departments in the development of regulations to protect water supplies. Highlights of this program area include:

(i) The Town of Antigonish surveyed the entire natural watershed of James River above the dam which was built in the late 1970s and requested its designation as a protected water area, which comprises 9,677 acres. The watershed is almost entirely forested, over half of which is Provincial Crown land and most of the remaining area owned by the Town.

(ii) The City of Dartmouth requested designation of over 17,000 acres of the entire natural watershed surrounding Lake Major, based on recommendations made in 1980 by the Lake Major Working Committee. A watershed advisory group, consisting of provincial and municipal officials and representative landowners, may be formed to deal with the matter of regulations. The area includes the communities of North Preston, Lake Major, Cherry Brook and East Preston. Because there is a Community Development Plan with a zoning by-law in effect for this area, which was formulated with specific provisions for water supply protection, regulations under the proposed Water Act designation will likely not be necessary for the planned area.

(iii) The water supply for the Village of Sherbrooke and the Sherbrooke Restoration Area is the Sherbrooke Lake watershed, encompassing an area of 506 acres, including several large lakes and tributaries. The Commission requested designation of this total area, which is mainly forested, some of which is Provincial Crown land. The Village Commission is concerned about the effects that logging operations and recreation activities will have on the water supply. Public input may be required because of a large number of forestry companies and individuals who own land in this area.

(iv) An area surrounding the Town of Windsor's water supply area, Mill Lake, was designated in 1964. The Town has requested that the designated area be enlarged, and the regulations be amended to include the entire watershed above the water intake on Fall Brook, located further downstream from Mill Lake. The request was made to provide extra protection of water quality since there will possibly be increased use of the forested area. Public input may be required before the request for designation is given Ministerial consideration.

(v) The water supply for the Town of New Waterford, Cape Breton County includes Waterford Lake and Kilkenny Lake. The watersheds were designated in 1970, but since that time major alterations to the water works resulted in a redefinition of the water supply area. The Town requested that the new area be designated, and the regulations amended to reflect the current and expected land ownership and land use activities. The Town is also attempting to acquire additional lands in the areas as an extra protective measure. Public input about proposals did not meet any vigorous opposition.

FIELD SERVICES DIVISION

The Field Services Division has the responsibility of conducting inspections and monitoring programs, by providing a wide range of investigative field activities as required by the Department in support of environmental protection.

The Division has five main areas of responsibility: Solid and Hazardous Waste Inspection, Air Quality Evaluation, Water Pollution Control, Water Well Management and Watercourse Engineering & Maintenance. Each section has the following responsibilities:

Solid & Hazardous Waste Inspection

The Solid & Hazardous Waste Inspection section is responsible for an on-going inspection and monitoring program of municipal, industrial and private solid waste disposal site practices. The section is also responsible for the inspection of areas contaminated by oil or hazardous material spills and undertakes supervision of the disposal of contaminated material.

The section reviews and appraises contingency planning with respect to accidents involving the handling and storage of gasoline and associated products and offshore drilling production. During the past year, the Solid & Hazardous Wastes group responded to 190 spill incidents.

Personnel from the section were extensively involved in the gas blow-out incident which occurred near Sable Island in February 1984. Negligible environmental impact was a positive indication that both industry and government were well prepared for such an incident.

The section continued the groundwater monitoring program implemented for all major solid waste disposal sites throughout the Province.

Air Quality Evaluation

The Air Quality Evaluation Section is primarily responsible for: (i) gathering air quality data in various areas of the Province; (ii) measuring pollutants such as sulphur dioxide, nitrogen oxide, ozone, carbon monoxide, suspended particulate and radiation levels; (iii) operating and maintaining an ambient air monitoring net-

work in the vicinity of the Lingan Thermal Power Plant; (iv) handling complaints from the public concerning air, noise, odour or related problems; (v) developing guidelines to assist industry in maintaining ambient air quality; (vi) undertaking monitoring studies for existing or proposed industries; (vii) assisting with stack emissions, testing of industrial sources.

The Department, through the Air Quality Evaluation Section, operated 25 permanent monitors and 19 high volume samplers in four areas of the province during the year.

The section also completed the final expansion phase of the ambient air monitoring network located in the Sydney/Lingan area, with the installation of a telemetry system. The network comprises seven monitoring stations reporting via telephone circuits to a central processor located in the Department's Sydney office. The control processor is capable of producing reports over any time period as well as indicating an alarm status in the event that predetermined levels of air pollution are exceeded. The section investigated approximately 80 air pollution incidents during the year, including a few noise related complaints.

Corrective measures were either implemented or agreed to as follows: (i) The Nova Scotia Power Corporation spent approximately $500,000, and committed further expenditures of funds to rectify an acid smut fallout problem at one of its generating plants; (ii) A plaster plant in Windsor, Nova Scotia, has embarked on a three stage program to reduce dust and noise emissions. The agreement reached with the company includes provisions for the installation of two bag-house filter systems. One system has been installed at year's end. (iii) A rendering plant in Truro has agreed to implement in-plant modifications including the addition of new control equipment aimed at reducing odour emissions.

Water Pollution Control Monitoring

This section is responsible for promoting the proper operation of wastewater treatment facilities to achieve effective pollution control of raw sewage. It is also responsible for the training of operators, inspection of sewage treatment plants and for response to complaints related to water pollution and environmental degradation. (See Table 1).

Brief highlights for the year were: (i) "Food Chain Kits" were circulated to various schools by the Port Hawkesbury Regional Office; (ii) A major shellfish survey in the Annapolis Basin was undertaken. Significant shellfish areas were reopened as a consequence of the survey; (iii) An assessment of the East River Pollution Abatement Facility was conducted, including sludge disposal practices; (iv) The section was predominately involved in follow-up investigations of fish-kills on McClures Brook, Truro; (v) Staff of the section assisted in monitoring activities associated with herbicide spray programs; (vi) There was a major examination of water quality in the Shubenacadie River and wastewater treatment plants discharging to the River; (vii) All regional offices were linked to the Nova Scotia Government Integrated Mobile Radio net.

Water Well Management

The Water Well Management Section is responsible for the administration of the Well Drilling Act and associated enforcement/inspection activities. The Well Drilling Act requires that all well construction contractors operating in the Province be licensed. Also, the Act provides a Well Drilling Advisory Board with representatives from the well drilling industry and other government departments to advise the Minister of the Environment on matters pertaining to well drilling in the Province.

The Water Well Management Section, through regular inspections, activities and response to complaints, strives to ensure that the public receives high quality well construction. High standards of workmanship are ensured by sponsoring courses at well drilling schools and with technical programs at conventions (See Table 2). About 50 percent of the province's population depend on wells as their source of water.

Watercourse Engineering and Maintenance

The section provides for the planning and implementation of environmental projects to modify the channels of freshwater streams for the purpose of reducing property damage caused by erosion and flooding. Throughout the Province, the section administers a cost-shared Streambank Stabilization Program, and a fully funded Stream Maintenance Program. Staff investigate erosion and flooding problems, provide reports and recommendations,and supervise works implemented for channel restoration, including

channel reconstruction, gravel bar removal, and armour rock protection.

During the 1983-84 fiscal year, thirty-one cost-shared streambank stabilization applications were received and investigated by staff. With limited funding and weather conditions, fourteen could be serviced. Four additional sites were repaired under the 5-year guarantee clause. During the same period, sixteen stream maintenance sites were proposed, with four sites being completed.

The section is also responsible for inspecting, maintaining, constructing, or removing provincially-owned dams. In 1983-84, staff removed a beaver dam and conducted site restoration work at West River and Sheet Harbour, as well as infilling the abandoned tailrace at Conquerall Mills Dam.

Staff of the section also removed the badly deteriorated dam at the outlet of Tangier River Lake, and coordinated the design of a replacement dam. This included the negotiation of property releases and easement for the new dam, with fishway, and auxiliary spillway.

In addition to regular duties during 1983-84, staff responded to and were asked to oversee special projects for this Department, the Emergency Measures Organization, and the Department of Government Services.

These included: (i) implementing coastal erosion control works at Hampton Beach, Annapolis County and streambank erosion works along the Middle River Reservoir, Pictou County; (ii) fish kill clean-up, McClures Brook, Colchester County; (iii) emergency ice jam removal, Balmoral Grist Mill, Colchester County; (iv) emergency dyke repairs, North River, Colchester County; and (v) assisting Department of Lands & Forests with the monitoring and rescue of beached pilot whales in the Shubenacadie River, Colchester County.

UTILITIES DIVISION

The Utilities Division is responsible for the operation and management of thirteen provincially-owned and maintained industrial water supplies and waste treatment facilities. The Division is also responsible for identification and protection of potential industrial and municipal water supplies.

In fulfilling these responsibilities during the 1983-84 fiscal year, eleven water supply stations, one domestic sewage treatment plant and one industrial waste treatment facility were operated and maintained. The water pumping stations included a salt water supply at Grand Etang and Lockeport, and a freshwater supply at Cheticamp, Port Hawkesbury, Canso, Pictou, Chester, Riverport, Lockeport and Middle and Lower East Pubnico.

Industrial waste from Scott Maritimes Limited in Pictou and domestic waste in the Town of Canso are treated.

In addition to normal maintenance and operations, major renovations to the Lockeport salt water supply system for the two fish processing plants were designed and completed. This included a complete re-design of the intake structure, as well as replacement of pumps and piping at the plant, to provide both the capability to meet increased water demand and to replace obsolete equipment beyond economical repair.

Facilities at Riverport, a deep-well freshwater supply system, were expanded to meet contractual obligations.

Several relatively minor additions or alterations were carried out at Pictou, Melford and Hayden Lake.

A major problem at Cheticamp, resulting from an unexpected significantly decreased safe yield from the existing well system, was investigated. Capital funding was requested in the upcoming fiscal year's budget to rectify the problem. Of particular note was the involvement in the small scale hydroelectric power project by Black River Hydro, utilizing water from the Melford Reservoir in Guysborough County. Also, longer than anticipated shutdowns at Scott Maritimes Limited and at Deuterium Canada Limited's heavy water plant in Point Tupper reduced overall water consumption for the year, which resulted in a corresponding reduction in electrical power consumption. (see table 3)

ADMINISTRATION AND FINANCE DIVISION

The Administration and Finance Division provides administrative and financial support services to the three main operating divisions and the office of the Minister and Deputy Minister. The four major activities to which the division provides support service are:

(1) Office of the Minister and Deputy Minister — provides executive management to the Department, liaison with municipal, provincial and federal agencies and recommendations to the provincial cabinet on environmental policies.

(2) Offshore Oil and Gas Development Review — within the office of the Minister and the Deputy Minister, the Department provides a coordinated review of offshore oil and gas development respecting the environmental assessment of the potential impacts of major developments that might affect the province (see Environmental Assessment Division page 10 for program details).

(3) Information and Education Services — provides a coordinated liaison among the Department, the public and the media. This program promotes public awareness of environmental issues and a response service to public and educational enquiries.

(4) Administrative Support Services — the principle administrative and financial support service functions which this division provides to the Department include: accounting, personnel, central filing, central stationery and inventory control, as well as the day-to-day management of the operations of the office and its equipment. In addition, a specialized environmental library-research facility is maintained for use by educational and research institutions (schools, universities, etc.), consultants, industry and other government agencies.

Nova Scotia Environmental Control Council

The Environmental Control Council is a 12-15 member citizens' advisory board which provides advice to the Minister of the Environment and represents the interests of the environment and general public in resource decisions. Under the Environmental Protection Act, membership must include representation from the following disciplines: health, law, engineering, industry, labour, municipality, conservation or ecology groups, agriculture, academic, forestry and fisheries. The Council is supported by an Executive Secretary and a research coordinator, and includes the Deputy Minister of the Environment as an ex-officio member.

The Council offers annual awards to recognize outstanding environmental service in six categories: individual, groups, organizations, youth, government, and industry. Details about the Environmental Awards program, activities of the Council and a copy of its annual report can be obtained by contacting:

The Executive Secretary
Nova Scotia Environmental Control Council
P.O. Box 2107
Halifax, Nova Scotia
B3J 3B7 Telephone (902) 424-5300

Advisory Groups

West Colchester Coastal Erosion Advisory Committee: A Coastal Erosion Advisory Committee was established in the fall of 1983, to advise the Minister on the feasibility of conducting an erosion control pilot project along the north shore of the Minas Basin. Committee members included three representatives from the Department, two members of the West Colchester Rural Development Association and a representative of the Municipality of Colchester Planning and Development Department. To date, the Committee has selected five candidate sites and has established site evaluation criteria. Comparative cost estimates of revetments at each of these five locations are at present being prepared.

Sable Island Advisory Committee: The Department continued to be represented on the committee established to advise the federal Department of Transport on environmental matters related to Sable Island.

Petite Riviere Watershed Advisory Group: The Petite Riviere Watershed Advisory Group was formed by the Department in 1977 in response to a number of water related problems in the Petite Riviere system in Lunenburg County.

The purpose of the Advisory Group is to advise the Province of Nova Scotia through the Department, the Town of Bridgewater, and the Municipality of the District of Lunenburg on problems and solutions to water quality and flows in the watershed of Minamkeak Lake, Leipsigate Lake, Hebb Lake, Fancy Lake, and the Petite Riviere system.

Members of the Advisory Group are largely volunteers, with representation from the Town of Bridgewater, Municipality of the District of Lunenburg, Bridgewater Public Service Commisison, Hebbville Village Commission, Fancy Lake Owners' Association, Minamkeak Lake Owners' Association, N.S. Salmon Anglers' Association, Crousetown-Petite Riviere area, and the Department of the Environment.

Information on the projects and activities of the Advisory Group, and meeting dates, can be obtained by contacting:

Chairman
Petite Riviere Advisory Group
c/o Lunenburg County District Planning Commission
P.O. Box 341
23 Pleasant Street
Bridgewater, Nova Scotia
B4V 2N9 Telephone: (902) 543-8244

Canada-Nova Scotia Flood Damage Reduction Program

In June, 1978, the Province entered into a five-year joint Canada-Nova Scotia Flood Damage Reduction Program funded equally with the federal government under the Canada-Nova Scotia General Agreement Respecting Flood Damage Reduction, along with two subsidiary agreements respecting flood risk mapping and studies.

This program (1) attempts to reduce damage caused by flooding in Nova Scotia; (2) conducts flood risk mapping to identify flood prone areas; (3) studies flooding problems to determine the cost of remedial methods and recommends measures to reduce or prevent damage; and (4) provides information to the public to ensure safety and restrict private and public development in flood prone areas. These agreements expired June 22, 1983, but currently are under negotiation to extend the terms of the agreements to complete unfinished work.

The project is directed by a Steering and Technical Committee with representatives from the federal and provincial governments. Information about the Program and the annual reports can be obtained by contacting the Program Manager, N.S. Department of the Environment, P.O. Box 2107, Halifax, Nova Scotia B3J 3B7, phone 424-5300.

Environmental Emergencies

In Nova Scotia, all oil or chemical spills which occur must be reported to one central phone number: 426-6030 in the Halifax/Dartmouth metropolitan area, or call your operator if you live elsewhere in the province and ask for ZENITH 49000. This single reporting number will connect the caller to the 24-hour operator at the Canadian Coast Guard Traffic Centre in Dartmouth. This single call fulfills the legal reporting obligations of all the environmental regulatory agencies.

The Nova Scotia Department of the Environment cooperates with all other provincial and federal departments to ensure a coordinated and integrated response to all spill incidents. The Department's involvement will vary depending on the spill circumstances and the jurisdiction. The Department, however, is responsible in all circumstances for designation of disposal sites and debris disposal procedures.

The Department operates from its main office in Halifax along with five offices located throughout the province as follows:

Region	Location	Phone Number
Central	Halifax	424-5300
Valley	Middleton	825-6246
Northumberland	Pictou	396-4194
Truro	Truro	895-9266
Canso	Port Hawkesbury	625-0791
Cape Breton	Sydney	539-8515

Grants Program

(1) Municipal Services

For the fiscal year 1983-84, grants totalling almost $965,500 went to various towns and municipalities to help establish various sewage and water municipal services. Included in these grants were:

- City of Dartmouth
- Municipality of the County of Cape Breton
- Municipality of the County of Halifax
- Municipality of the District of Yarmouth
- Municipality of the County of Victoria
- Town of Middleton
- Municipality of Annapolis County

Various studies were also carried out during the same time period totalling almost $253,500 for the sewage treatment and solid waste management. The studies involved the following regions:

- Municipality of the District of Hants
- Village Commissioners of Lawrencetown
- City of Sydney
- Municipality of the District of Guysborough
- Municipality of the County of Kings
- Municipality of the District of West Hants
- Cumberland County District Planning Commission
- Municipality of Clare
- Pictou County Solid Waste Management Study
- Metropolitan Authority
- Town of Wolfville

(2) Derelict Vehicle Program

The provincially-run Derelict Vehicle Program came to an end during the 1982-83 fiscal year, but the clean-up of old wrecks on Tancook Island was carried over into the 1983-84 year. Since the inception of the program during the fiscal year 1976-77, a total of 35,866 wrecks were collected around the province.

Meetings, Committees and Seminars

The Department was involved in a number of intra-government and inter-provincial meetings and committees. One of these is the provincial Deputy Ministers' Committee on Land Use which examines many aspects of provincial land use concerns.

The Department was also involved in the provincial Uranium Task Force through studying the effects of uranium on drinking water. There was, as well, representation from the Department on a Federal-Provincial Task Force on Water Quality Guidelines, along with attendance at the National Conference on Critical Issues in Drinking Water Quality sponsored by the Federation of Associations on the Canadian Environment (FACE) and Health and Welfare Canada.

Input from the Department was also included on the Technical University of Nova Scotia's on-site sewage disposal research panel. The Department has provincial representation on the Associate Committee on Hydrology of the National Research Council of Canada.

Staff from the Department attended the Maritime Provinces' Water and Waste Water Association's annual seminar. There was participation at the FACE National Inventory Committees (MUNDAT), and at the FACE-CET (Certification Education Training) Committee. Representatives from the Department also participated at the Atlantic Canada Section American Waterworks Association (AWWA).

Towards the end of the fiscal year, work began on forming the Advisory Panel on Erosion and Sedimentary Control. The Canada-Nova Scotia Flood Damage Reduction Program also continued its work throughout the year. The Nova Scotia Well Drilling Association carried on with providing instructional courses for well drillers and various other programs and meetings on this subject.

Additionally, the Department was represented at the National Conference on Waste Management held in Vancouver. There was also on-going meetings with the Nova Scotia Christmas Tree Growers Association and the major pulp and paper companies on pesticide management.

The Department actively participated at the Eastern Canada Environment Ministers' meeting dealing with such issues as acid precipitation, and at the Research and Monitoring Coordinating Committee (RMCC) which consists primarily of Deputy Ministers and Assistant Deputy Ministers. On the subject of acid precipitation, papers were presented to the Atlantic Environment Ministers' meetings, and the Canadian Council of Resource and Environment Ministers' (CCREM) meeting. The Department presented an acid rain seminar at the Canada Centre for Inland Waters in Burlington, Ontario, as well as attending the International Acid Rain Meeting in Ottawa. This Department also went overseas to attend meetings on coal combustion and acid rain in conjunction with the Central Electricity Generating Board (U.K.).

Finally, the Department was involved with the CANUSLANT '83 Exercise, which was a result of a joint Canada/United States Marine Pollution Contingency Plan for Spills of Oil and Noxious Substances. The purpose of this exercise was to prepare various agencies in the event of a major offshore international incident. The Department worked side by side with federal agencies, and the Canada and United States Coast Guards. On the regional level, the Department is also represented on the Regional Environmental Emergencies Team (REET). In the Atlantic region, REET is comprised of provincial, federal, municipal and industrial organizations who have a role to play in an emergency response.

Public Information and Education Programs

"Our Fresh Water Resources" was published this year to be used in schools and for general information. Plans call for this publication to be part of a kit which will include posters and an audio/visual presentation.

"Environmental Standards for the Construction of Forest Roads and Fire Ponds in Nova Scotia" was produced in conjunction with the federal Department of Fisheries and Oceans and the Nova Scotia Department of Lands and Forests to provide standards to minimize and avoid environmental damage. Copies are available upon request from the Department.

Other reports and technical papers include:

Acidification of Nova Scotia Lakes. III. Patterns of SO_4 and NO_3 deposition, and SO_4 concentrations in rural and urban lakes. 1983. J.K. Underwood, H.H. Vaughan, J.G. Ogden III, and J.J. Kerekes. Presented to September 1983 meeting of the Royal Society of London. 18 pp.

Groundwater hydrographs in Nova Scotia, 1965–81. A background and historical review of the individual stations in the provincial groundwater monitoring network, providing related hydrographs. J. Robert McIntosh, 185 pp.

Acidification of Nova Scotia Lakes. IV. Response of diatom assemblages in rural lakes. 1983. H.H. Vaughan, J.K. Underwood, J.J. Kerekes, and J.G. Ogden III. Presented to September 1983 meeting of the Royal Society of London. 15 pp.

An overview of precipitation chemistry of Nova Scotia. 1983. J.K. Underwood. Annual Meeting of the Canadian Society of Environmental Biologists — Atlantic Chapter. Extended abstract to be published in proceedings.

Table 1: Water Pollution Control Facilities, Nova Scotia

County	Municipal	Industrial	Totals
Annapolis	9	2	11
Antigonish	10	0	10
Cape Breton	20	7	27
Colchester	17	3	20
Cumberland	19	3	22
Digby	9	0	9
Guysborough	9	0	9
Halifax	86	10	96
Hants	22	0	22
Inverness	22	0	22
Kings	15	3	18
Lunenburg	28	2	30
Pictou	16	2	18
Queens	10	0	10
Richmond	9	4	13
Shelburne	9	0	9
Victoria	11	1	12
Yarmouth	9	0	9
Total	330	37	367

All waste treatment facilities are monitored on a regular basis.

Table 2. Water Well Drilling in Nova Scotia 1983–84

Wells drilled	**Number**
Observation	15
Industrial	35
Public	18
Domestic	2,250
Equipment in full- or part-time use	
Cable	41
Rotary	39
Backhoe	38
Jetting	2
Diamond	nil
Men employed full- or part-time	228
Pump tests assisted on	53
Accidents, including diamond drilling	
Fatal	0
Compensable	6
Licenses issued	
Drilling machine	81
Backhoe	36
Complaints and written inquiries[1]	
Complaints	59
Inquiries	193
Water samples	
Well water	272

[1]In addition to this, phone calls and personal visits resolve about 80% of the inquiries

Table 3. Utilities Division Water Supply and Waste Treatment Facilities

WATER SUPPLY SYSTEM								WASTE TREATMENT FACILITIES	
Raw Surface Water		Treated Surface Water		Groundwater (Well) Systems		Saltwater Systems		Industrial	Domestic
Source	User	Source	User	Source	User	Source	User	Location	Location
Landry Lake (Richmond Co.)	Atomic Energy Canada Ltd. Nova Scotia Forest Ind. Nova Scotia Power Corp. Gulf Refinery	Hayden Lake (Shelburne Co.)	Fish Processing Plant	Chetican.p	Fisheries Co-op High School	Grand Etang	Fisheries Co-op	Pictou	Town of Canso
	Town of Port Hawkesbury			Riverport	Fishing Industry	Lockeport	Fish Plant		
Town of Canso	Town of Canso Fish Plant Village of Hazel Hill			Lower East Pubnico	Fish Processing Plant				
Pictou (Granton)	Scott Paper Michelin			Middle East Pubnico	Fish Processing Plant				
East River (Chester)	Canexcel								
Melford (Guysborough Co.)	Hydroelectrical Project								